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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,202	01/10/2005	Ulrik Mehr	66722-065-7	7598

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DYKEMA GOSSETT PLLC
FRANKLIN SQUARE, THIRD FLOOR WEST
1300 I STREET, NW
WASHINGTON, DC 20005

EXAMINER	
SAUNDERS JR, JOSEPH	
ART UNIT	**PAPER NUMBER**
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/517,202	MEHR, ULRIK	
	Examiner	Art Unit	
	Joseph Saunders	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the communications filed December 14, 2006. Claims 1, 3, and 4 are currently pending and considered below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gore et al. (4,620,605), hereinafter Gore, in view of Rabe (5,890,072), hereinafter Rabe, and Lalikos et al. (4,712,642), hereinafter Lalikos.

Claim 1 and 4: Gore discloses a suspension tube for a transducer (tube 12, tubing 14 or tubular region 52 comprise the suspension tube), said suspension tube functioning as a sound-guide for directing sound between the transducer (microphone 16) and a cabinet (shell of hearing aid) of an audio processing device (hearing aid), wherein the suspension tube has means for forming a connection with an inlet/outlet of the transducer at a first end (tubing 14 or tubular region 52 is fit over projection 16a of the microphone 16) and means for forming a connection with a wall of the external cabinet of the audio processing device at a second end (tube 12 forms a connection forms a connection with inlet port 10) in order to guide sound through the tube, where an intermediate part of the tube in a length direction has alternating wide and narrow parts

(tube 12 has alternating wide and narrow parts, Figures 1 and 3), wherein the wide and narrow parts are shaped as circumferentially extending bellows (accordion style ridges where the tubing 14 or tubular region 52 connects), but *does not disclose* wherein a material thickness of the suspension tube does not vary between the connection with the inlet/outlet of the transducer and the connection with the wall of the cabinet, and the suspension tube including at least two consecutive sections, each comprising a wide and a narrow part, where the consecutive sections are shaped to have unlike resonance frequencies. Gore does discloses that the goal of the mounting or suspension system in a hearing aid is to keep the resonance frequency low and away from the operating frequency range of the appliance (Column 1 Line 51 – Column 2 Line 6).

Rabe discloses a nonresonant waveguide acoustically coupling an inlet port of an electronic device to a microphone, the "wave guide 30 includes a wall structure that forms a closed elongated generally sound tube," Column 3 Lines 47 – 49, and the "cross-sectional area varies between a maximum cross-sectional area and a minimum cross-sectional area," Column 4 Lines 2 – 5. The alternating cross-sectional areas of wave guide 30 forms an acoustical low-pass filter and has the effect that "the design of the wave guide 30 propagates sound energy and speech down the same into the microphone 30 in such a fashion that the delivered sound energy or speech is clear, undistorted and intelligible," Column 6 Lines 1 – 11. Therefore, Rabe discloses the benefit of having an acoustical waveguide or tube of alternating cross-sectional areas when connecting an inlet port to a microphone. Since the design of Rabe's tube is structural incorporated into the design of a telephone, one of ordinary skill in the art at

the time of the invention would be inclined to look elsewhere for teachings of how to create a tube similar to Gore's that incorporates the benefits of Rabe's invention so that other devices that connect an inlet port to a microphone via a waveguide or tube could also benefit from the acoustical properties.

Lalikos discloses a self-damping convoluted conduit for use in an environment that is subject to excessive vibrations. Lalikos discloses in one embodiment of his invention a conduit that has variable height and variable convolution thickness over the length of the conduit while maintaining a material thickness that does not vary over the length of the conduit (Figure4). The variation in convolutions results in "each incremental length of conduit has a different resonance frequency of its adjacent neighboring incremental lengths so that there is no overall high amplitude resonance along the entire length of the conduit, taken as a whole," Abstract. Therefore with Gore's objective in mind and the benefits taught by Rabe, in applications where inlet ports are connected to microphones via waveguides or sound tubes, and also the benefits taught by Lalikos, it would have been obvious to one of ordinary skill in the art at the time of the invention to design the tube disclosed by Gore with a shape disclosed by Lalikos so that beneficial acoustical properties pertaining to resonance can be achieved within the tube between the inlet port and the microphone.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gore et al. (4,620,605), Rabe (5,890,072), and Lalikos et al. (4,712,642), in view of Hoefler et al. (US 6,771,787 B1), hereinafter Hoefler.

Claim 3: Gore, Rabe, and Lalikos disclose the suspension tube as claimed in claim 1, and while all three disclose the tube having different circumferential shapes Gore, Rabe, and Lalikos *do not explicitly disclose* wherein a circumference thereof is oval shaped. Gore discloses that the circumferential shape is "tubular", Rabe discloses that the circumferential shape is "rectangular", "square", "curved", or "arcuate", and Lalikos discloses that he circumferential shape is "annular" or with a "helical pitch". Hoefler also discloses a waveguide having alternating cross-sectional area and further discloses where the waveguide "may be circular, oval, or a regular or irregular polyhedron, or some other closed contour," Column 3 Lines 6 – 9. Hoefler also discloses "the waveguide may be curved to a desired shape, to fit into an enclosure, or to position one end of the waveguide relative to the other end of the waveguide for acoustical reasons," Column 3 Lines 18 – 21. Since Gore, Rabe, Lalikos, and Hoefler all disclose that the circumferential shape does not alter the acoustical properties of the waveguide but that the acoustical properties is a result of the alternating cross-sectional areas and the lengths of the individual sections of varying cross-sectional area, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the overall circumferential shape of the sound tube disclosed by Gore, Rabe, and Lalikos oval shaped as disclosed by Hoefler therefore allowing the sound tube to better accommodate enclosures of different shapes and sizes.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 3, and 4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JS
April 5, 2007

SINH TRAN
SUPERVISORY PATENT EXAMINER